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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,356	09/26/2003	Mutsuko Hatano	520.39728VX1	5271
20457	7590	04/18/2005	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873			NGUYEN, TUAN H.	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 04/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/670,356

Applicant(s)

HATANO ET AL.

Examiner

Tuan H. Nguyen

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 20 is/are rejected.
- 7) ☒ Claim(s) 16-19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/791,853.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/03, 6/04.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 8, 13-15, 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamazaki et al. (U.S. 5,815,494).

See Yamazaki et al., figs. 1-12 and related text on col. 1-14 which discloses the claimed method for producing an image display device including a thin film transistor as shown in figs. 11A-11F, comprising growing semiconductor crystal grains in a transverse direction in a semiconductor film by modulating a continuous wave laser into a pulse laser beam (as shown in figs. 1-2, 4-7 and related text), and irradiating it on the semiconductor film (as shown in figs. 3, 11A-11B and related text).

With respect to claim 5, col. 11, third paragraph shows the energy density  $E2 = 280 \text{ mJ/cm}^2$  that is within the claimed range.

With respect to claims 13-14, fig. 3 shows the scan direction, and the crystal grain are grown in a strip shape following the direction of the scan.

With respect to claim 15, the charge transmitting and receiving means are source and drain regions 1107, 1108 of the thin film transistor as shown in fig. 11D.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 6, 7, 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (U.S. 5,815,497).

Yamazaki et al., figs. 1-12 and related text on col. 1-14 discloses substantially the claimed method for producing an image display device except silent about the semiconductor is a polysilicon, the pulse width, the modulator, the laser beam source, the alignment pattern.

However, by disclosing the use of pulse laser beam for irradiating a semiconductor thin film, it would have been obvious to those skilled artisan to recognized that it would includes both polysilicon and amorphous silicon thin film.

With respect to the pulse width, col. 7, lines 39-49 suggests to select a suitable pulse width L as annealing characteristics required for obtaining an optimum result.

With respect to claims 9-12 since the modulator, and laser source, and mark alignment are well-known and commercial available, it would have been obvious to those skilled in the art at the time the invention was made to have used the conventional modulator and laser beam source for modulating the continuous wave into the pulsed laser beam, and alignment pattern for irradiating the semiconductor thin film as

Art Unit: 2813

disclosed by Yamazaki et al. in order to improve the crystallinity, uniformity of the crystallized thin film, reduce the film roughness.

***Allowable Subject Matter***

Claims 16-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Allowable Subject Matter***

The following is a statement of reasons for the indication of allowable subject matter: None of the references of record teach or suggests the claimed method for producing an image display device including a thin film transistor wherein a main orientation of the semiconductor film constituting the channel region is {110} with respect to a main surface of an insulating substrate or the gate insulating film.; or wherein the semiconductor film is essentially comprised of crystal grains having an axis in a longitudinal direction of  $45^{\circ}$  or less; or wherein the semiconductor film is comprised of a small inclination grain boundary having an angle of  $75^{\circ}$  or less.

***Conclusion***

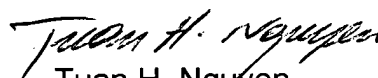
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Im et al., Hayashi et al. are cited as of interest.

Art Unit: 2813

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is 571-272-1694. The examiner can normally be reached on 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tuan H. Nguyen  
Primary Examiner  
Art Unit 2813